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Program = BS (DT). "B"

Subject = physiology

Q No = 1

Ans:-

Composition of blood:-

Blood is mainly composed of two thing formed element and plasma.

⇒ A specialized formed connective tissue that consist of liquid portion and formed element.

Composition of Blood

(i) Plasma
Liquid portion of Blood

(ii) Formed Element:
RBC, WBC Platelets.

(i) Plasma:-

⇒ its is part of extracellular Fluid that contain more protein.

⇒ it covers 55% Blood volume.

⇒ The remaining volume 45 % covered by formed element.

Composition :-
it have two component.
(i) water (ii) Solid.
↳ it have 92 %.
(ii) Solid :-

Composition

Organic Contant
⇒ it include protein, fats and enzyme, Hormones.

inorganic content.
⇒ it include Na^+, K^+, and Ca^{++}.

Plasma protein :-

(*) Albumin - regulation of PH.

(*) Globulin :- Defense.

(*) Fibrinigen :- help in Blood clotting.

Serum:- Plasma without Fibrinogen is called serum.

(ii) Formed Elements:

1 = Red Blood cells. (Erythrocytes)

- it is rounded, Biconcave and Disc like structure.
- Non - Nucleated.
- Diameter: 7.8 micrometer.
- Thickness = 2.5 micrometers.
- **Male:**
  5200000 / cubic millimeter of blood in males.

  Female:
  4700000 / cubic millimeter of Blood in female.

2 = White Blood cell: (Leukocytes)

- Mobile unite of protective system of the body.
- Colourless and irregular shaped.
- Nucleus present.
- Large in size than RBCs.
- Range = 4000 - 11000 cm^3

→ 7000 per microliter of Blood.

Type:

→ Polymorphonuclear neutrophilis 62 %.
→ " " Eosinophilis 2.3 %
→ " " Basophilis 0.4 %.

→ Monocytes 5.3 %.
→ Lymphocytes 30%

3 = Platelets:

→ 300.000 per microliter of Blood.

Function of Blood:

1 = Transport of Nutrients, waste products, Blood gases & Signaling molecules.

2 = Immune function.

3 = To maintain homeostasis of water, ions & pH.

4 = Distribution of heat throughout the body.

5 = Blood clotting.

Q No = 2

Ans:: Erythrocytes ::

- Erythrocytes are also called red Blood cell.
- life spine = 120 days.
- its non-nucleated.
- These is most abundant of all the type of blood cell.
- Approximately 2.4 million erythrocytes are produced per second.
- one quarter of the cells in human body are red Blood cells.

Structure:-

- In human, Mature red Blood cells are bioconcave

rounded, Flexible and Disc like Stoucture.

⇒ Diameter = 7-8 µm.

⇒ volume = 83 cubic µm.

⇒ The Lack of Nucleus and other organelles. in order to provide greater Space for haemoglobin.

⇒ Human red blood cell take 20 second to complete one cycle of circulation.

⇒ RBC ace elastic membrane that why it change these shape when it pass through the capillaries.

Function:-

⇒ Transport of oxygen in Body by Haemoglobin

⇒ RBC contain Carbonic anhydrase which catalze reactio between water and CO_2 for the removal of CO_2 from tissue through the lung.

- Haemoglobin is an excellent acid-Base buffer
- it mantain PH.
- it help in Blood group determination.

Erythropoiesis:

erythro = red
poiesis = To make.

- The process which produced red blood cells. which is the development from erythropoietic stem cell to mature red blood cell.
- it stimulated by decreased of "O_2" in circulation which is detected by the kidney. which then secrete the hormone erythropoietin.
- The whole process take abobt 7 days. through this process erythrocytes are continously produced in

the red bone marrow. of large bone. at a rate of production is 2 million per second in a healthy adult.

Erythrocytosis:- (Polycythemia).

The increase of erythrocyte in blood than normal range such a state are called Erythrocytosis.

(i) Physiological Erythroxytosis:-

An increase the absolute red blood cell mass in the body. this also refers to the increase in hemoglobin levels.

⇒ it also is considered withe age and genders.

(ii) Pathological Erythrocytosis:-

⇒ Abnormal increased Blood cell and Hemoglobin in blood. that result in thickened blood, retarded flow, and increase danger of clot formation in the circulatory System.

Erythropenia:

A decrease in Number of erythrocyte. its associated with anemia.

(i) Physiological:

Absolute: Deficiency of production of RBC.

Relative: in pregnancy it dissolve with the Fluid of uratus.

(ii) Pathological:

Primary: Bone marrow disorder.

Secondary: Cause any kidney disease.

Q No=3

Ans:

Platelets:

- it is also called Thsombocytes.
- Platelets are tiny blood cells that help your body from clots to stop bleeding. if one of your blood vessels damage. the platelets then rush to the site of damage. They foam clot to fix damage.

Stsactuse:

- it has no cell Nucleus.
- it is desived from megalcaryocytes of the bone marsow, which then entes the circulation.
- circulating unactivated platelets are biconvex lens Shepe stsactuse 2-3 um in

diameter.

⇒ Activated platelets have cell-membrane projection Covering their surface.

⇒ Platelets are found in mamals and also found in other vertebrate like, bird and amphibians.

⇒ Life Span: is 10 day.

Function:

⇒ stop bleeding.

⇒ Maintain hemostasis.

⇒ Clothing machanism.

Clotting Mechaism:.

⇒ clotting means = Blood change from liquid to gel.

initiated:.

⇒ After an injury to the blood vessels. which has damage the endothelium lining of the vessel.

⇒ clotting mechanism → Stop bleeding from damage vessels → maintained hemostasis.

Machanism involves:.

(1) Adhesion
(2) Activation.
(3) Aggregation of platelets.
(4) deposition and maturation of Fibrin.

(1) Adhesion:-

⇒ Injury of endothelium lining of the blood vessel damaged.

⇒ Blood comes into space under endothelium.

⇒ Underlying collagen exposed to circulating platelets.

⇒ Platelets binds with surface receptors of collagen and adhere tightly. this is called adhesion.

(2) Activation:-

⇒ Platelets change there shape.

⇒ turn on secepters and secreate chemical messenger to activate and invite additional platelets.

⇒ Activated platelets adhere tightly at injury site.

(3) Aggregation :-

⇒ Platelets connects to each other through receptor bridges.

⇒ Platelet plug formed at injury site unless the interruption is physically too large.

(4) Fibrin deposition :-

⇒ Formation of platelets plug will ensure primary hemostasis

⇒ Now fibrin deposition start and thus started Secondary Hemostasis.

⇒ Thus fibrin clot formed.

⇒ Now clot retraction and platelet inhibition.

Q No = 4

Ans:

ABO System:

According to Research and Serve. the average blood groupe age.

- Blood group "O" = 47 %.
- " " "A" = 41 %.
- " " "B" = 9 %.
- " " "AB" = 3 %.

Discovery:

- it is discovered by Dr. Karl Landsteiner in 1900
- it is inherited from parents.
- these grouping is based on "A" and "B" antigens Agglutinogens.
- on Red Blood Cell in may have.
  - Neither of them.
  - it may be one of them.

⇒ it may be both of them.

Agglutinogens and agglutinins:-

⇒ These Agglutinogens protein are present on the Surface of Red blood cell.

⇒ Agglutinins are present in the blood plasma.

⇒ Due to antibody and antigen it cause blood transfusion reaction which cause may be death.

⇒ Agglutinoger are antigen. while Agglutinins are antibodes.

Blood group Table.

	Blood type	Antibodies	Antigen.
Group "A"	A	B	A
Group "B"	B	A	B
Group "AB"	AB	Non	AB
Group "O"	O	A-B	None.

Role of blood group in blood transfusion.

⇒ If mismatched of Blood group then it cause Hemolysis.

⇒ Blood typing is mandatory.

Blood Type	Antigen	Antibodie	Receives	Donates.
"A"	A	"B"	O, A	A, AB
"B"	B	"A"	O, B	B, AB
"AB"	A and B	None	O, A, B, AB	AB
"O"	None	"A-B"	"O"	O, A, B, AB

Q No=5 (i)

Ans: ⇒ Look closely how the have fallen and carefully put them into the recovery position to keep their airway clear.

⇒ Place a cold compress or ice pack on any bump or bruises.

⇒ If they are not breathing: Start CPR immediately and act according to your organisation emergency policy.

⇒ Give acetaminophen or ibuprofen for pain if your child need.

⇒ Watch your child closely for the next 24 hours for any unusual symptoms or behavior.

⇒ Keep the person still:-

If there Severe bleeding injured keep the and person lying down quiet, with the head and shoulders slightly elevated Don't move the person unless necessary and avoid person moving the person neck.

Stop any bleeding:-

Apply firm pressure to the wound with sterile gauze or a clean cloth. but don't apply

direct pressure to the wound if you suspect a skull fracture.

Watch for changes in breathing and alertness:

If the person shows no sign of circulation - no breathing, Coughing or movement begin CPR.

Q NO = 5 (ii)

Ans:- If my friends is infected with the covid-19 than you should take great care of me.

⇒ First you need to wear gloves and a mask.

⇒ when you meet your friend, you should

be a dis of 1 meter.

⇒ Do not shake hands when meeting a friends.

⇒ Greetings from afar.

⇒ During the meeting the friend should be instructed to wear a mask and gloves.

⇒ A friend Should be instructed not spread the corono virus.

⇒ You should apply Sanitizer on clothes and hands before the end of the meeting.

⇒ You should avoid unnecessary appointments.

=> if you feel the need to meet, you should follow ~~Soon~~ Covid-19 instruction.

=> At Last
Stay Home Save the world.